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Lab optics clear skies for telescope



GEMINI OBSERVATORY

Approximately two hours of stacked exposures of the summer sky over Gemini North on Mauna Kea. The setting moon provided light on the right side of the dome and twilight provides a glow to the left side of the dome; a small red light provides a highlight on the center of the dome.

By Anne M. Stark

NEWSLINE STAFF WRITER

In galaxies far, far away, lies a series of planets the size of Jupiter that people don't really know all that much about.

Actually, they are not that far away — only about 30–150 light years away from our solar system — but Livermore scientists are on a quest to find these planets and in turn learn more about

See GEMINI, page 7

Laboratory team's research points to a new method for making super hard materials

By Lynda Seaver

NEWSLINE STAFF WRITER

Research conducted by a team of scientists led by the Laboratory suggests a new way of making super hard materials under high pressure conditions. The research offers a glimpse at harder materials that could one day be used in fusion energy production, spacecraft shielding and safer automobile frames, as well as other applications.

The findings, under the title "Ultra-Hard Nanocrystalline Metals by Shock Loading," are reported in the Sept. 16 edition of *Science* magazine.

"This marks the first time anyone has been able to do actual shock experiments on nanocrystalline metals and, at the same time, carry out numerical simulations in supercomputers to interpret the results" said Eduardo M. Bringa, a materials scientist at the Laboratory and the principal investigator on the team.

Until now, understanding of how nanocrystalline metals deformed at very high strain rates had been limited to computer simulations. For their research, Lab scientists introduced shockwaves via the Lab's Janus laser.

Their findings point the way to making materials harder than anything previously achieved.

In general, metallic materials used in everyday applications are made of small "grains" joined by grain boundaries. When the grain size is reduced to less than 100 nanometers, the material is considered

See NANOMATERIALS, page 7



LYNDA SEAVER/NEWSLINE

Lab firefighters return from New Orleans

Last week, Lab firefighter Arnie Brockmire, center, returned from New Orleans, where he spent more than two weeks helping victims of hurricane Katrina. Brockmire was greeted by his wife Teri (left) and was interviewed by a Channel 2 news reporter.

Brockmire, along with Lab firefighter Kenneth Rinna, arrived at Oakland International Airport on Sept. 18. They were among 14 firefighters returning to a hero's welcome and cheers from family and friends.

See relief
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The two LLNL firefighters were part of a search and rescue squad from different Alameda county fire departments. The squad performed more than 980 rescue missions, including 100 children separated from their parents. The team was sent as part of a Federal Emergency Management Agency request for swift water rescue personnel.



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reveals its
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LAB COMMUNITY NEWS

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Sunday
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The Livermore Public Library will host author **Michelle Feynman**, daughter of Nobel Prize winning physicist Richard Feynman today at 2 p.m. Feynman will discuss her latest book, "Perfectly Reasonable Deviations from the Beaten Track," a collection of letters about her father that offer a look at the scientist who played an important role in the development of the atomic bomb. The program is made possible by a donation from the "Friends of the Livermore Library." For more information, contact Joyce Nevins at 373-5500, ext. 5583.

Tuesday
27

The ERW team has scheduled a second demonstration of the new Enterprise Reporting Workbench environment today, from 10-11:30 a.m. in the Bldg. 155 auditorium, room 1101. For more information, call 2-9299, or e-mail ERWHelp@llnl.gov.

Administrative Information Systems is in the final stages of deploying the new **Enterprise Reporting Workbench (ERW)** to the MyLLNL/ Portal environment. The ERW will provide users with a variety of reporting tools to retrieve information from Laboratory business data domains such as finance, facility, procurement and travel.

The first major application will be the AIS Data Warehouse, the primary Lab financial information retrieval system used by the Lab's resource management community. The migration of Data Warehouse functionality and users to ERW will begin in October and take about three months to complete.

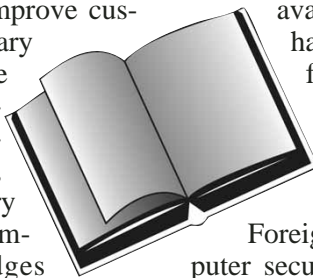
Thursday
29

The Employee and Organization Development Division (EODD) is offering a brown-bag briefing today at noon, in Bldg. 571, room 2301 for employees interested in pursuing an **undergraduate or graduate degree**. This is a good opportunity for employees to learn about the Lab's tuition assistance program, meet others interested in going back to school and talk one-on-one with EODD staff. To register for this briefing, call 4-5479.

New access procedures for Library to begin

To enhance security and improve customer service, the Lab's Library will soon begin using active directory and SecuriKey to provide access to the patron computers in the main library, Trailer 4727. Currently, library patrons wishing to use these computers must have their badges visually inspected and scanned by library personnel before they are given the daily password.

Four of the five library patron computers in Trailer 4727 are on active directory and are



available 24/7 to all employees who have active directory accounts. The fifth computer is accessible via SecuriKey. To borrow the SecuriKey, employees must first have their badges visually inspected and scanned by library personnel.

Foreign nationals need to have a computer security plan on file in the library to borrow the SecuriKey.

More information about the Library's new patron access procedures is available on the Website (http://www-r.llnl.gov/tid/library/general_info/computer.php)

IN MEMORIAM

William Gordon Earnest

William Gordon Earnest died Sept. 14 from complications of a stroke. He was 91.

Earnest was born in Luray, Kan. in 1913 and was one of five children of William and Jesse Earnest. He was married in 1939 and moved to California at the beginning of World War II. During the war, Earnest was a Merchant Marine and worked as a welder, building ships. At the end of the war, he purchased and ran three gasoline service stations in East Oakland. Later, he worked at the Lab as a welder and fabricator for more than 20 years.

Earnest was an outdoorsman, and in his later

years, an avid gardener.

He is survived by a sister, Ellene Davis of Hays, Kan.; niece, Sonya Howes of Castro Valley; nephew Bill Davis of Hays, Kan.; niece Cindy Beattie of Jackson, Miss.; niece Sheila Lahman of Blue Springs, Mo.; and grand nephew Dean Trouette of McKinleyville, Calif.

A memorial service will be held Oct. 1 at 10:30 a.m. at the Lighthouse Baptist Church in Pleasanton. Donations may be made to the Society for the Prevention of Cruelty to Animals, Dublin Hospice or a charity of choice.

Kathryn Hughes Smith

Kathryn Hughes Smith, a former resident of Livermore, died Aug. 31 in Pasco, Wash. She was 86.

Born Feb. 2, 1919, in Superior, Wis. to John and Mary Hughes, she was the eldest of seven children. In 1938, she married James W. Smith, to whom she was married for 43 years until his death in 1981.

Smith worked at the Lab as an executive secretary from 1958 to 1963. In 1964, she went to work for the University of California. She was instrumental in establishing the satellite campus of the UC Davis, Department of Applied Science, in Livermore, where she worked as the business manager for 20 years. She retired in 1984, but continued to work part-time for the Fannie and John Hertz Foundation in Livermore until 1991.

She is survived by her son, James Smith and wife Christy of Kennewick, Wash.; her daughter, Kathryn Mooney and husband, Patrick, of Salem, Ore.; her sister, Julie Heesen of Phoenix, Ariz.; her brothers, John Hughes and wife Carole of Rancho Mirage, Calif.; Daniel Hughes and wife Marie of Las Vegas, Nev.; and William Hughes and wife Carol of Cottondale, Fla.; her granddaughter, Kimberly Meyers; her grandsons, Don and Dean Zorn, and Ryan and Michael Mooney; numerous nieces and nephews, and three great grandchildren.

There will be a memorial service today (Sept. 23) at 10 a.m. at St. Michael's Catholic Church, Livermore. Remembrances can be made in her name to the victims of Hurricane Katrina through the American Red Cross.

Newsline

Newsline is published weekly by the Public Affairs Office, Lawrence Livermore National Laboratory (LLNL), for Laboratory employees and retirees.

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LAB TV broadcasts

MONDAY— FRIDAY, SEPT. 26-30

Join us in viewing highlights of Hispanic Heritage Month.

MONDAY	"Race, Ethnicity and the Future of California," by Luis Ricardo Fraga, Stanford University.
TUESDAY	"U.S. Hispanics: Diversity Within Diversity," by Richard Tapia, Rice University.
WEDNESDAY	"Who is an American? Diversity and Freedom in American History," by Eric Foner, Columbia University.
THURSDAY	"Contractors' Construction Safety Orientation," by Plant Engineering Production, Spanish version.

These programs will appear on Lab TV Channel 2, 4 and 7 at 10 a.m., noon, 2, 4 and 8 p.m. and 4 a.m.

For information about Lab TV broadcasting and video production, contact LLTN, 3-3846.

News from HOME

“Guide Dogs for the Blind” representative talks to HOME Campaign committee

Michael Hingson and his Guide Dog, Roselle met HOME Campaign committee members, organizational team leaders and representatives this week at the Lab. Hingson, the national public affairs representative for “Guide Dogs for the Blind,” gave a presentation outlining the many resources available through the Guide Dogs organization, a non-profit agency listed in the 2005 HOME Campaign.

Prior to his position with Guide Dogs, Hingson worked in New York City for Quantum Data. Hingson and Roselle found themselves in the national limelight after Sept. 11, when they escaped the World Trade Center attack, walking down 78 flights of stairs shortly after the first tower was hit by a hijacked plane. Eventually, against many odds, they made it to safety. They have since become well-known as representatives of the strength of the human/animal bond.



Michael Hingson and his guide dog Roselle.

HOME Campaign updates

Today (Sept. 23) is the last day of the special “one-week only” method of donating online through HOME to the American Red Cross, the Salvation Army and the Society for the Prevention of Cruelty to Animals for the Hurricane Katrina Disaster Relief.

Donations contributed during this one-week period will be deducted from employees Sept. 30 paycheck (if paid monthly) or Oct. 14 paycheck (if paid bi-weekly). To donate to the Hurricane Katrina Disaster Relief, go to the following Website: http://home/katrina_relief.html.

The 2005 HOME Campaign kicks off Oct. 12 with the Run for HOME. From Oct. 12 through Dec. 9, employees may choose to donate to their favorite HOME charities by means of a check or by payroll deduction.

HOME improvement opportunities

On Thursday, Sept. 29, from 6:30 to 8:30 p.m., the HOME Campaign is sponsoring bingo at the Livermore Veterans Administration Hospital. This effort is one of the “LLNL at HOME in Our Community” events. Donated snacks such as baked goods, cookies, sugar-free items and fruit (bananas work well) as well as juice, punch and sugar-free soda are welcome. At least 10 volunteers are needed. Volunteers will assist patients and serve snacks and drinks. If you are interested, contact Chelle Clements, 3-8134, or chellec@llnl.gov.

Follow the Yellow Brick Road on the “Run for HOME”

Get out your running shoes, roller blades and costumes. It’s time for the Lab’s annual HOME Campaign run scheduled for Wednesday, Oct. 12. Get into the spirit of this year’s theme “There’s No Place Like Home”

Employees share thoughts on HOME



During the weeks leading up to the “Run for Home” Newsline will feature comments from employees who were asked “Why is it important to participate in the HOME Campaign?”

“Donate to the HOME Campaign to help fight poverty. Poverty is on the increase in our country and in California. Your donation to the HOME Campaign will help.”

— DENNIS ELCHESEN,
LIBRARY DIVISION, TID

“Because it gives you that “warm, fuzzy” feeling that lasts. You never know when you or a loved one may need help. And, it feels good to participate.

— KATIE ADAMS, NAI

and watch the “Wizard of Oz,” Oct. 4-5 in the Bldg. 361 auditorium, 11:45 a.m.-1 p.m. Because of its length, the movie will be presented in two parts. Prior to each viewing, there will be a “Wizard of Oz” trivia contest.

BRIEFLY

Personnel policy changes

Two personnel policy changes recently went into effect. The changes were made to sections regarding hours of work and extended workweeks, and military pay policies. Additionally, changes have been made regarding the reimbursement of sick leave for worker’s compensation-related medical appointments.

Section L Hours of Work, Extended Workweeks

Notice to employees was provided on Aug. 12 regarding the proposed changes to the Laboratory extended workweek-related policies and procedures. The revisions went into effect Sept. 4. Unlimited-time employees already approved for extended workweeks prior to Sept. 4 are considered to be qualified to receive extended workweeks pay under the new policy until the end date of their existing approvals.

Supplement to Military Pay Extension

Notice was provided July 29 that the University had proposed that the supplement to military pay policy be continued, effective Sept. 1, 2005 through June 30, 2006, with a two-year limit on benefits, retroactive to Dec. 14, 2001 (the policy’s original starting date). This extension of benefits was implemented Sept. 1.

Sick Leave for Workers Compensation Related Medical Appointments

Notice was provided on Aug. 12 that the Laboratory would be ending the practice of reimbursement of sick leave for incremental hours for medical appointments for work-related injuries or illness. This change became effective Sept. 11. For more information on these changes, contact Tish Rzeszutko at 2-6597, or rzeszutko2@llnl.gov

Flu vaccine to be available

The Laboratory’s Health Services Department has requested 3,500 doses of flu vaccine for the 2005-06 flu season. Delivery is expected in mid-October. Vaccines will be made available to the general Lab population after mid October.

Once the vaccine has been received, flu clinic dates and locations will be announced. Walk-in clinics in the cafeterias and at HSD will be free of charge to employees. To request a field clinic in your area, contact your ES&H team clinician to make arrangements for the additional staffing that will be required. Look for additional information in *NewsOnLine* and *Newsline*.

CASIS Workshop 2005 — call for abstracts

The Center for Advanced Signal and Imaging Sciences (CASIS) and LLNL’s Engineering Directorate will present the 12th

Web provides guidance on employee assistance for hurricane relief

For information on how you can assist hurricane victims, go to the LLNL Hurricane Katrina Relief Website: http://www-r.llnl.gov/pao/katrina_effort.html. The page has been updated with information regarding Lab employees whose family members have been impacted by the disaster. This information is now available at http://www-r.llnl.gov/pao/impacted_employees.html. Employees who have relatives affected by the disaster should contact Tommy Smith, 2-6634.

annual two-day “Signal and Imaging Sciences Workshop” on Nov. 17-18. James L. Flanagan of Rutgers University, the 2005 IEEE Medal of Honor winner, will be the keynote speaker. There is no cost to attend the workshop. Titles for talks and abstracts must be received by Oct. 7. For more information, contact Dora Da Rosa, 2-4797, or darosa2@llnl.gov, or go to the Web at <http://casis.llnl.gov>



NEWS YOU CAN USE



JACQUELINE MCBRIDE/NEWSLINE

Sister city discoveries

Visitors from Pleasanton's sister city of Tulancingo, Mexcio, view the mock-up of the NIF target chamber in the Lab's Discovery Center Thursday. Alicia Calonico-Soto, right, of the National Ignition Facility helped interpret for the visitors during their tour.

Getting some one-on-one electronic mentoring

By Charles Osolin
NEWSLINE STAFF WRITER

Laboratory scientists, mathematicians and engineers, as well as retirees, who are interested in mentoring young professionals in their fields can now do so electronically as well as face-to-face.

The Lab has rejoined MentorNet, a nonprofit organization offering a one-on-one electronic mentoring program. According to Tommy Smith, the Lab's deputy associate director for strategic initiatives and diversity, MentorNet "provides the opportunity to make a big difference in the life of an undergraduate, graduate student or postdoc in as little as 20 minutes a week."

LLNL's Engineering and Computation directorates are leading an effort to recruit science, mathematics and engineering professionals to serve as mentors. Mentors, including retirees, should be associated with the Laboratory.

Mentoring relationships last eight months. Because mentors and students communicate entirely by e-mail, they can keep in touch wherever and whenever they



choose. MentorNet's research-based programs have proven effective by providing "real world" information, encouragement, advice and access to networks for students, and particularly for women and others underrepresented in engineering and science, Smith said.

"A great benefit of being a MentorNet mentor is the chance to make a positive difference in the life of an engineering/science student," said David Price, a senior safety analyst in the Nonproliferation, Arms Control, and International Security Directorate. Price, a MentorNet mentor since 1999, when LLNL first joined MentorNet as a sponsor, has worked with multiple MentorNet proteges every year since 2000.

"Another benefit is that long-term friendships can develop as a result of the interaction," Price said. "I still keep in touch with two former proteges who have graduated and moved out into the work force. It's a great feel-

ing to hear them talk about using resources, skills and problem solving methods I helped them develop as they tackle work and life-related crises after leaving school."

To volunteer to be a mentor, join the MentorNet Community at <http://www.mentornet.net/join>, then follow the One-on-One Mentoring Programs links to create a mentor profile. To see some snapshots of pages from MentorNet go to <http://www.mentornet.net/Documents/Demo/Community/>.

Price cautioned that "not every student will have the drive and commitment to develop and maintain the (mentoring) relationship. Occasionally a student/mentor pairing will not work for various reasons.

"I encourage mentors to stay focused on the opportunities that do result in making a big difference in a student's future and to stay involved with the program for several years," he said. "When a student who really needs and works with a mentor comes along it makes all the effort truly worthwhile."

For more information, contact Ted Saito in Engineering (saito1@llnl.gov) or Linnea Cook in Computation (cook13@llnl.gov).

Technical Meeting Calendar

Friday 23

INSTITUTE FOR GEOPHYSICS AND PLANETARY PHYSICS
"Cosmological Applications of Close Pairs of Quasars," by Joseph Hennawi, UC Berkeley.
Noon, Bldg. 163, room 219. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Wil van Breugel, 2-7195, or Lisa Lopez, 3-0250.

Tuesday 27

RADIATION DETECTION CENTER
"Non-Iterative Reconstruction Techniques," by Donald Gunter. 11 a.m., Bldg. 151, room 1209. For a list of upcoming and past RDC seminars, go to the Website: <http://rdc.llnl.gov/seminars.html>
Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Christine Shannon, 3-6683, or Ron Wurtz, 3-8504.

Wednesday 28

CENTER FOR APPLIED SCIENTIFIC COMPUTING (CASC)/INSTITUTE FOR SCIENTIFIC COMPUTING RESEARCH (ISCR)
"TAU: Performance Technology for Productive, High Performance Computing," by Sameer Shende, University of Oregon. 10 a.m., Bldg. 543, room 1258, Grand Canyon Room. For more information, go to <http://www.llnl.gov/casc/calendar.shtml>.
Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Bronis de Supinski (CASC), 2-1062, or Erica Dannenberg, 3-2167.

Thursday 29

PHYSICS & ADVANCED TECHNOLOGIES/V DIVISION
"Recent Developments and Applications of FAC," by Ming F. Gu, Stanford University. 10:30 a.m., Bldg. 219, room 163. Property protection area. Foreign national temporary escorted

building access procedures apply. Contact: Stefanie Landes, 2-3201.

Friday 30

INSTITUTE FOR GEOPHYSICS AND PLANETARY PHYSICS
"Probing Dark Energy and Inflation with Standard Rulers," by Lloyd Knox, UC Davis.
Noon, Bldg. 219, room 163.
Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Wil van Breugel, 2-7195, or Lisa Lopez, 3-0250.

The deadline for the next Technical Meeting Calendar is noon Wednesday.
Please submit your meetings through the Technical Meeting Calendar form on the Web, located at <http://wwwr.llnl.gov/tmc/index.html>

AROUND THE LAB



Cabrales is a ‘founding father’ of outreach efforts

By Linda Lucchetti

NEWSLINE STAFF WRITER

Note: In honor of National Hispanic Heritage Month, Sept. 15-Oct. 15, Newsline features an Amigos Unidos Hispanic Networking Group member, who is a “Community Champion.”

You might say that Plant Engineering Building Coordinator Xavier Cabrales is a “founding father.” Not only has he helped to shape the history of the Amigos Unidos Hispanic Networking Group, but also was present during the initial stages of several Lab outreach programs.

Cabrales, the third from the youngest of 12 children, moved with his family to the United States from Durango State in Mexico, when he was 16 years old. He began to work at the Lab in 1981. At that time, the Hispanic networking group, Amigos Unidos, was informal and just evolving. Cinco de Mayo, Mexico’s Battle of Puebla, celebrated on May 5, was a primary fund-raising activity that brought the group much attention.

Not shy, Cabrales approached then Laboratory Director Roger Batzel, asking if he would help to sanction Amigos Unidos under Lab auspices. Cabrales smiles when he recounts the story, saying that Batzel was “very nice and willing to do whatever he could to assist.”

Over the years, Cabrales has been active in



JACQUELINE MCBRIDE/NEWSLINE

From left: Xavier Cabrales and Andres Martinez of Amigos Unidos.



many outreach projects. So, why is he so involved? Cabrales believes in helping people in need. Here are a few examples of his efforts.

When two separate, devastating earthquakes over a span of two years struck Mexico City and Central America, Cabrales collected funds, clothing and medical supplies with the help of

Amigos Unidos members and the Lab community. Fellow Amigos Unidos member Jose Hernandez, now a NASA astronaut, and at that time, chair of the networking group, took the donations to the thousands of people in need in the two affected regions.

Cabrales took part in the early “Lab lends a light,” program that organized a clothing and toy drive for local needy families during the holidays — a program shepherded by now Lab retiree Betty Klino.

Like Octavio Cervantes, Cabrales feels the necessity to reach out to high school students and urge them to stay in school. He assisted in the creation of the Amigos Unidos scholarship program.

To acquaint Lab employees with the Spanish language, he helped to establish Spanish classes still being offered today through Amigos Unidos.

He helped write the charter that established Amigos Unidos as an official networking group. In addition, he was a member of the original board of the Lab’s Children’s Center when it opened.

Outside the Lab, Cabrales helps the ‘Flying Doctors’ program headed in Livermore by Lab retiree, Fred Roads. Along with Amigo Unidos members, he loads trucks to send medical supplies to people in need in the Coahuila and Durango states in Mexico.

When asked of which Lab activity he is most proud, Cabrales replies the Cinco de Mayo event. “The annual Cinco de Mayo fund-raiser over time has grown. It literally put Amigos Unidos on the map,” Cabrales said.

Hispanic Heritage Month celebrates contributions of Hispanic Americans



National Hispanic Heritage Month is a national observance authorized by public law. Each year, from Sept.15-Oct. 15, America honors the many contributions Hispanic Americans have made and continue to make to our nation.

Hispanic heritage in the United States traces back to the Spanish conquistadors who explored and established settlements in the southern and southwestern parts of the United States long before the English came to America. Their contributions are significant, extending beyond food and music to political leadership and Nobel Prize-winning achievements in physics and chemistry.

The observance was initiated in 1968 as National Hispanic Heritage Week but was expanded in 1988 to include the entire 31-day period.

Hispanic Heritage Month began Sept. 15, the anniversary of independence for five Latin American countries: Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua. In addition, Mexico declared its independence Sept.16, and Chile on Sept.18.

Celebración



JACQUELINE MCBRIDE/NEWSLINE

The Latin salsa and jazz band Timbalero performed Wednesday at a celebration kicking off National Hispanic Heritage Month in the Bldg. 551 picnic area next to the Central Drainage Basin. Lunch plates of carnitas, chile colorado and tamales were offered as a fund-raiser for the Amigos Unidos Networking Group’s scholarship fund. The event was sponsored by Amigos Unidos and the Work-Life Programs Office.



CLASSIFIED ADS

See complete classified ad listings at

<https://www-ais.llnl.gov/newsline/ads/>

AUTOMOBILES

1994 - LS 400 Lexus, 64,000 miles, excellent condition, \$12,000 925-443-9588

2002 - Mitsubishi GT Spyder Eclipse, convertible, power leather seats, 5 sp. \$12,900 209-401-0921

1981 - Corvette AT, PS, glass t-tops. Re-painted three yrs. ago. New tires. Runs well. 100K miles. Needs interior work. \$4K. 925-513-3536

1996 - Dark-green Saturn SL-2. Manual transmission (new clutch). Leather seats, A/C, CC, power windows/locks, great gas mileage. Excellent condition.\$3,000 925-443-3076

1991 - 35 MPG Mazda Protege. 160k mi. Ugly duckling. 1-owner, Low-cost to operate/insure. Reliable commute car. Great for college student. \$1250 OBO 925-447-5134

2000 - Ford Expedition 5.4L 4x4 very clean, third row seat, rear air, 6 disc cd, keyless entry, new tires. \$11,900 OBO. 209-679-2798

1992 - Toyota 4 Runner SR5 Sport Utility 4D, air, pwr, rack, tint, tow, 130K \$5000 obo 925-846-3548

1996 - Honda Accord LX, maroon. 196K miles in good condition. One primary owner and well serviced. Great commute car. 209-832-1321

1986 - Trans Am Firebird - Fixer upper project, runs ok, needs body and interior work, V8 4 barrel 5 spd, good tires & rims, \$750 OBO 209-814-9140

AUTOMOBILE ACCESSORIES

Complete Chevy engine-350/4bolt, Edelbrock 600 cfm carb, Edelbrock intake, chrome valve/Tim covers, HEI dist, water pump, fuel pump, alt, starter. \$1400 209-470-1971

Camper shell, Leer 100 series, fiberglass, black, 1 yr old, cost \$1000 new, \$400 or b/o. 209-599-3463

Cooler/warmer for vehicle. Plugs into cigarette lighter. Holds up to 6 cans. Paid \$32. New in unopened box. Great for road trips. \$20 925-648-0671

BOATS

Ski tube, 60-inch round Sea Doo w/4 padded handles and rugged nylon cover. Paid \$100. New in unopened box. \$60 925-648-0671

Caribe inflatable rigid bottom dinghy model C10X, four adults, 20 hp max. Like new, with cover and extras. Motor not included. Cost \$3500 new \$2500. 925-455-0859

14-ft. Traveler aluminum fishing boat, trailer & motor. Flat bottom boat, re-built trailer, Evinrude motor, needs minor repair, \$850 OBO 209-814-4757

CAMERAS

Picture framing tool. Logan Model 750 SimplexPlus mat cutter. Brand new, never used, still in original box. Retail \$389.95. Asking \$195.00 OBO. 925-846-3653

Sigma 28-200 zoom lens, up to 4x, Nikon mount,\$100. 925-377-6537

ELECTRONIC EQUIPMENT

Portable VCR and 41 TV monitor w/carrying case. Great for entertaining kids. Plugs into cigarette lighter/110 wall outlet. Paid \$300; only \$75 OBO. 925-552-0282

TV, 14-in. flat screen Toshiba, stereo sound, timer, parental controls, video inputs front and rear,

original remote & manual, built 2004, \$90. 925-784-8970

Portable electric typewriter. 1994 Smith Corona Spellmate correctable with extra ribbons and correcting tape. Great condition, hardly used. \$35 OBO. 925-846-3653

Car amplifier system, three amps (75, 150, 250 watts), Kicker SS100 box with woofers and tweeters, and misc. cables, make offer for good deal 209-836-9082

Sony receiver Dolby Digital/DTS audio/video control center 100W-X5, 8 Ohm, 1KHz, 0.7%THD. Practically new. \$50.00 OBO. 925-240-5526

LED bathroom scale, Taylor model with 1.8 inch readout, chrome plated bezel. Paid \$32. New in unopened box. \$20 925-648-0671

Nice starter stereo equipment. Akai stereo cassette deck \$50.00, Sony AM FM stereo receiver, \$50.00. Excellent conidition. Can bring to work. 510-537-7222

GIVEAWAY

Washing machine, works fine, basic features, only five years old. 925-447-1944

17-Inch monitor, Emachine, works fine, can bring to LLNL, FREE 925-785-2371

Mirror, 70-x-36 in., excellent condition. 925-455-0926

Donvier ice cream maker - chill canister overnight, use the hand crank to churn fresh ice cream! Old but works fine, all pieces intact. 510-912-6823

HOUSEHOLD

Coffee table and two end tables, modern stone and glass style, excellent cond, pics available, make offer 209-836-9082

Kenmore white extra large capacity electric dryer. 1 year old. Excellent condition. \$75 obo. 209-832-7204

Lg cap, wh. Kenmore electric dryer, like new, will deliver, \$75.00 209-620-1771

Bed, queen sized. Mattress and box springs. I live in Livermore; you must pick it up. Good condition. \$100/OBO 925-360-4521

Barbeque grill, Thermos 18-1/2-inch stainless steel on wheels, 247 square-inch cooking grid. Paid \$50 plus tax. New in unopened box. \$30 925-648-0671

Child's antique desk, pull-out board and 2 drawers, \$120 925-449-3499

Water softener w/ electronic controller, \$100 OBO 209-483-8719

Many household items: washer/dryer, fridge, sofa/loveseat, TempurPedic mattress, lamps, TV, coffee tables, more (moving to furnished house) 925-447-6719

White Whirlpool fridge(\$50), GE range(\$50) microwave(\$25) & dishwasher(\$15). Working fine! Pick up in Pleasanton, OBO, proceeds go to Katrina 510-912-6823

Formal cherry dining and matching china cabinet in great condition \$1200 OBO. Complete sofa set, and more must go too. 925-455-9149

Freezer for sale- \$50 obo. Fridgaire. Works well, just no room at new house. pictures avail 209-838-3600

Desk, small solid oak computer desk with keyboard tray, no drawers <2 yrs old \$75 925-484-6451

LOST & FOUND

Lost: 9/5 Palm Pilot, Tungsten model, in vicinity of Bldg. 490. Height: 4.5-inch Width: 3.1-inch, in slim leather case. 925-245-1414

MISCELLANEOUS

Swimming pool by Intex, 90-inch-es-x-22-inches round, water capacity 277 gallons, 3 cup holders, repair patch. Paid \$32. New in unopened box. \$20 925-648-0671

Wilsons women's leather jacket. Size XL. Practically new. Paid \$275, asking \$125 obo. 925-457-3650

Potters electric variable speed wheel — low usage. Shimpo West RK2, including hand tools.\$350.00 925-447-8843

Industrial jig saw, good for detail. Hardly used. Excellent quality, heavy-duty. If interested, will bring to work. 50.00 510-537-7222

1978 Cessna T210M 6-passenger turbo airplane. 2500 hr TT 1100hr SMOH. 1/5 share available. Hangared at LVK, \$25,000. 925-443-5693

Wardrobe boxes; 5 - \$25 for all. 925-734-0615

Two American Airlines vouchers, each for \$250, good anywhere until June 2006, discount at \$200. 925-377-6537

Tiller, Craftsman 24-inch front tine, 5 HP engine. 2 years old, excellent condition. \$200/ call after 5PM 209-836-0116

Beer brewing kit, everything needed to make home brew, never used, a \$200 value, asking \$55 obo 925-684-3709

MOTORCYCLES

12 ft. Enclosed trailer with ramp. Single axle, side door, perfect for bikes or quads. \$1,500 209-239-6918

2003 - Yamaha YZF R-6. Black/silver. 82XX mi. Small cosmetic scratches on one side, otherwise in great shape w/new Michelin Pilot power tires. 40 mpg. \$6300 925-895-1861

MUSIC INSTRUMENTS

Suzuki violin, 1/4 size, Wolf violin headrest (1/2 size), all like new. Make offer 415-543-3643

Trumpet: Selmer Bach TR300, in excellent condition. Includes hard-shell case, mouthpiece and accessories. \$300. 925-518-4647

Looking to use your voice and music reading talents? Sing with the Valley Concert Chorale. Call before 9 p.m. please 925-449-7009

Lowrey Organ model PS, with piano bench. Two tier keys. Early 1960s vintage, tube-type electronics. Looks and sounds great. \$100/ call after 5 p.m. 209-836-0116

RECREATION EQUIPMENT

Schwinn SRB-1800 recumbent stationary bike. Brand new, electronic monitoring, adjustable seat, magazine rack, perfect condition! \$275.00 OBO 209-814-0400

Water chase lounge for pool by Swim Ways. Cloth lounge bed, inflatable head & foot rests, non-corrosive aluminum. Paid \$54. New in unopened box. \$30 925-648-0671

iPod mini action jacket. New in box. Paid \$29.99, asking \$20 obo 925-457-3650

12-ft. enclosed trailer with ramp. Single axle, side door, perfect for bikes or quads. \$1,500 209-239-6918

RIDESHARING

Express your commute, call 2-RIDE for more information or visit <http://www-r.llnl.gov/ tsmg>.

Stockton - looking to start or join

carpool from Stockton 6:30 a.m. to 4 p.m. page 00154 or ext. 3-0475 thanks. 209-954-1703

Modesto - Looking to start a car-pool (no smoking) from north Modesto/Salida area. Work hours 7 a.m. -3:30 p.m. Mon-Fri. 209-521-7702, ext. 2-1687

Gustine, Newman, Patterson - rider/driver needed, typical hours are 7 a.m. -4:30 p.m., but can be flexible, 209-854-3418, ext. 2-3026

Modesto - Looking to start or join a carpool from Modesto. Work hours 6-2:30. Pager: 03914. 209-818-4454, ext. 0-3914

Walnut Creek - Vanpool seeks 4th/5th rider. Leaves Rudgear park-n-ride at 7:20. Lab hours 8:00-4:45. 925-946-9796, ext. 3-4842

El Cerrito - Berkeley Vanpool has openings for full time or casual riders. M-F 7:45 am to 4:30 pm work schedule. 510-524-5769, ext. 3-7995

San Jose/Fremont - 14 passenger van needs riders. Leaves San Jose/Berryessa 6:40; arrives LLNL 7:30; leaves LLNL 4:30. Very reliable. 408-238-1909, ext. 3-3057

Orinda - Lamorinda carpool(no smoking) seeks 4th rider/driver. Carpool meets near St. Stephens and Hghy 24. Lab hours 8am-4:45pm. 925-253-0498, ext. 2-9823

SERVICES

Interior, exterior painting. Time to paint before the holidays. Excellent references. Excellent workmanship. 25 yrs. exp. 510-537-7222

Math tutoring thru pre-calculus. Affordable help from a Livermore credentialed teacher. Weekly slots filling up fast. 925-548-6187

Piano tuning. Your place or mine. 10 percent LLNL discount on regular tuning. 925-337-3051

SHARED HOUSING

Livermore - Room 4-Rent. Nice back yard, \$600/month includes utilities. 925-449-1474

TRUCKS & TRAILERS

2000 - Tundra V8 2WD, ext. cab 4 dr, tow package, leather seats, fully loaded, soft shell cover 108K \$10,500 209-832-5552

1999 - Dodge Durango, KBB \$11,440, 85K miles, SLT, 4WD, third seat, CD, V8, Rf rack, ABS, AC, pwr locks, chrome wheels, new brakes and tires 209-836-9082

1988 - Toyota 4x2 regular cab long-bed pickup, 107000 mi., a/c, bedliner, \$2500. 925-443-7082

1996 - Ford Ranger, XLT, extra cab, bedliner, long bed, cassette. Runs well. Nice work truck. \$5,000.00 OBO 510-537-7222

1987 - Tow Dolly KarKaddy 260, excellent condition. \$850 OBO. (\$1600 @ trailer accessory super-store) 505-412-2288 cell, 925-245-0656

1997 - Land Rover Discovery 133K,V8, 4x4, CD, hunter green, tow pack., smog cert., new muffler, new brakes, leather. Leave message. 925-200-4241

1985 - Chevy Blazer, 350 w/ 199K miles, rebuilt transmission, power windows/locks, air conditioning, runs well. \$2000.00 O.B.O. Leave message. 209-239-1963

1973 - Bug, project car, lots of extras, chrome, dual carbs, runs. \$850.00 209-835-8976

1997 - Pathfinder SE V6, 150k

miles, good condition, stereo, automatic, gold color, AC, service by dealer with tow hitch. \$8k or best offer. 925-984-9039

VACATION RENTALS

Maui, Wailea Ekahi, 1 bedroom, 2 bath, luxury condo, tropical beach resort (209) 478-0340

Squaw Valley, - Thanksgiving week (11/20-27). one bedroom timeshare condo available at Olympic Village Inn. Sleeps 4+, fully furnished, ski and hiking. Good rate. 415-543-3643

Vacation at first class resort one block from Wakiki Christmas week, December 20-27, 2005. (\$550) Please call home number. 510-581-5228

Mendocino Coast - - ccean view - large 4 bd/4.5 ba home, hot tub, private courtyard, deck, sleeps 8-10, pets ok w/ dep., 2 night min: \$475 plus tax & cleaning 925-455-5942

Pinecrest - (Off Sonora Pass Road), 3 bdrm/2 bath, frplc w/wood, microwave, dishwasher, pool table, large deck and view up no. fork of Tuolumne, \$195/wknd. 925-449-5513

Honolulu - Looking for small condo or studio to rent in Waikiki area from Dec. 23-Jan 6. Dates are open, near the zoo. 510-537-7222

Tahoe Donner (Truckee) - 3 br/2 ba tranquil mountain cabin near golf, water, biking, hiking. \$125/nt. Available through mid-December. 925-858-0419

South Lake Tahoe - Reserve now for your winter vacation! 4B, 2BA, NS, NP, close to casinos and ski slopes. 925-373-0650

Soda Springs cabin, two- for-one Fall special, 4 brm, 2 ba, 925-487-8366

South Lake Tahoe - 3 bedroom 2 bath chalet, nicely furnished, quiet area, all amenities, park with lake, tennis, great for family vacation. Reserve now for holidays. 209-599-4644

Maui, HI - Kahana reef ocean-front 1 br/1 ba condominium. Beautiful two-island view, ocean-side pool and BBQs. LLNL rates for year-round reservations. 925-449-0761

WANTED

Wooden ukelele wanted, must be in good condition. 925-449-7888

Wanted AT&T GSM cell phone 925-449-1340

Wanted: friend with car. Two graduate students seek. 925-449-3149

WANTED: Old stereos, amps, speakers, vacuum tubes, musical equipment. Any condition. 925-443-2954

Looking for a up-right freezer at a reasonable price. Prefer frost-free 209-986-1225

Clawfoot, free-standing or slipper bathtub wanted for 1920's remodel. 510-366-1089

2-3 br home to house sit/rent from 10/15-12/1. Will take good care of home & pets. Resp. couple waiting for new home to close escrow. 925-846-3278

WANTED: Miscellaneous bass fishing equipment - Poles, reels, lures, 12 V trolling motor. Please call after 6 p.m. 925-449-4093

Empty shoeboxes for Operation Christmas Child. Any size, any amount will be appreciated. 415-927-4415

GEMINI

Continued from page 1

how solar systems like ours formed.

Working with UC Berkeley, UCLA, the Jet Propulsion Laboratory, the American Museum of Natural History, the Hertzberg Institute in Canada and several smaller partner institutes, LLNL has been selected as the lead institution to build the Extreme Adaptive Optics Planet Finder (ExAOC) for the Gemini Telescope.

With an enhanced adaptive optics system, astronomers will be able to minimize the blurring effects of the Earth’s atmosphere — even more so than the current adaptive optics systems are capable of — to produce images with enough detail and resolution so that gas giant planets such as Jupiter can be detected, said Bruce Macintosh, principal investigator for the project from the Laboratory’s Physics and Advanced Technologies Directorate.

Adaptive optics systems use light from a relatively bright star to measure and then correct the atmospheric distortions by bouncing light off of a deformable mirror. The new system will be able to correct for atmospheric distortions at a rate of 10 times better than the current system, Macintosh said.

In the new system, there will be from 3,000 to 4,000 actuators to control the deformable mirror. Unlike the adaptive optics system set up on the Keck Telescope in Hawaii (which LLNL also helped build), whose 349-actuator mirror is made out of a thin sheet of reflective glass, the ExAOC’s actuators will be made out of etched silicon MEMS (Micro-Electro-

Mechanical Systems), much like what is found on a microchip. The actuators can adjust the shape of the mirror by several microns with a precision of less than one nanometer.

To date, new planets have been found using a technique called the Doppler shift, in which the wavelength of light emitted by a moving object is shifted due to its motion. Radiation is red shifted when an object is moving away from us and blue shifted when the object is moving toward us. Astronomers use Doppler shifts to calculate precisely how fast stars and other astronomical objects move toward or away from Earth. As a giant planet orbits a star, it tugs it back and forth, producing a very small (meters per second) Doppler shift.

However, this technique merely shows the existence of a planet. It doesn’t tell an astronomer anything about how the planet formed its mass, temperature, radius or composition, things the new system will be able to detect, Macintosh said. The Doppler shift also is only sensitive to giant planets closer to their parent star compared to adaptive optics, which is better for planets further from their star, such as Jupiter is in our solar system.

When a planet forms, it releases a large amount of energy in the form of heat, which the telescope will be able to detect using an infrared spectrograph. Most young stars generate a lot of heat and planets form shortly after the star is born, Macintosh said.

“We’ll be studying planets orbiting around stars other than our sun,” he said. “Nobody really knows how planetary systems like ours formed. This is planetary archeology — we’ll be able to see how solar systems formed, and perhaps understand whether there’s room in other solar systems for planets like Earth.”

The Gemini observatory is an international facility

with twin 8-meter telescopes at Mauna Kea (North) and Chile (South), sponsored by the United States, United Kingdom, Canada, Chile, Argentina, Australia and Brazil.

Other Livermore team members include Project Manager Dave Palmer, Project Engineer Vic Karpenko, lead AO engineer Lisa Poyneer and optical engineer Brian Bauman, all from Engineering, and postdoc Christian Marois of the Institute of Geophysics and Planetary Physics. James Graham — a long-time LLNL collaborator — from UC Berkely, will serve as the project scientist.

The adaptive optics system will first be installed on the telescope in Chile because most of the young stars whose planets are easier to detect are located in the southern hemisphere, Macintosh said.

The Extreme Adaptive Optics Planet Finder is funded primarily by the National Science Foundation through the Association of Universities for Research for Astronomy (AURA). First light is predicted near the end of 2009.

The advanced adaptive optics technology developed for this new system will have applications in other areas, such as remote sensing capabilities and the biomedical field, Macintosh said.

As an astronomy student and postdoc, Macintosh delved into the search of brown dwarfs, planets and moons in our solar system such as Neptune and Titan. But now his focus has changed a bit.

“I’m tired of those planets. I want to look for new ones,” he said. “I can’t wait until we actually get going with this project.”

And one day even, maybe he’ll find a new terrestrial planet just like Earth.

NANOMATERIALS

Continued from page 1

“nanocrystalline.” (As a reference point, human hair has a thickness of a few microns; one micron equals 1,000 nanometers.)

Nanocrystalline materials have extraordinary properties, such as enhanced hardness. However, when the grain size becomes extremely small, the grains slide over each other as the material deforms, causing the material to become softer.

“It’s sort of like stepping into sand,” said Bruce Remington, a laser physicist at the Lab and a participant in the research. “The material is solid but you still sink into it.”

The Lab-led team studied what happened when a shock wave was passed through samples of nanocrystalline nickel and copper. In addition to the experiments, they carried out simulations using up to 4,000 processors in LLNL computers. These are the largest simulations of nanocrystals to date. The shock waves, produced by a high-intensity laser, move faster than the speed of sound and generate pressures nearly one mil-

lion times larger than atmospheric pressure.

“This high pressure increases the friction among grains and decreases the sliding,” Bringa said. “By turning off the mechanism that softens the grains, we create a material that, being hard to begin with, is even harder during and following the shock wave application.”

Remington cautioned the research remains in an early phase, but said such research could point the way to harder materials that could be used in shielding military vehicles, protecting spacecraft from damage caused by interplanetary dust particles, or safer bumpers and automobile frames. The materials also could have applications in inertial confinement fusion experiments.

In addition to Bringa and Remington, Lab team members include Alfredo Caro, Yinmin (Morris) Wang, Maximo Victoria, James McNaney and Ben Torralva of Materials Science and Technologies Division within Chemistry and Materials Science; and Raymond Smith of the Physics and Advanced Technologies Directorate. Helena Van Swygenhoven from the Paul Scherrer Institute in Switzerland also contributed.

“I feel very lucky to be part of a gifted team of scientists polling their talent to understand nanocrystals,” Bringa said. “It was truly emotional when things

clicked in place and we realized that we could understand something extremely complex based on relatively simple ideas.”

Bringa said the team has not yet been able to measure what happens during the shock wave transit, which lasts nanoseconds, “but we have studied how the material changes after shock loading.” As part of this ongoing project, Bringa said the team will continue collaborating with worldwide experts in order “to improve our understanding of these interesting nanocrystalline materials.” Plans are in place to do the first time-resolved measurements at the Janus laser, to refine the understanding of the shocked nanocrystalline samples.

“Ultimately, however, we hope to conduct such experiments at the extraordinary pressures accessible on the 2-MegaJoules NIF (National Ignition Facility) laser currently being built at LLNL,” Remington noted. “We would like to see just how hard such materials can become, when we ‘pull out all the stops’ on the applied pressure. If we were surprised with the results from the Janus laser, all bets are off when we throttle up by another factor of 100 in pressure on NIF. This is a very exciting time for this new scientific frontier of ‘extreme materials science’.”

EMS Factoids

Helping employees understand our Environmental Management System

LLNL’s Environmental Policy Declares Our Commitment to...

Responsible Environmental Stewardship

- Resource Conservation
- Source Reduction
- Pollution Prevention

Environmental Compliance

Performance Measurement

Continuous System Improvement

Environmental Management System

Plan/Identify

Implement

Measure & Evaluate

Review & Improve

ISO-14001

Visit the Environmental Management website regularly to learn how we can continue to be good environmental stewards. Go to <http://www-epd.llnl.gov/ems/index.htm>

Traffic change at Mesquite

Stop sign changes have been completed at West Perimeter Drive and Mesquite Way. West Perimeter traffic proceeds through the intersection; Mesquite traffic must stop. Because this is a recent change, drivers are encouraged to be alert and proceed cautiously at this intersection.

DAVID SCHWEOGLER/NEWSLINE

Site 300’s autumnal splendor

Although the hills appear to be covered in a monoculture of brown grass at this time of year, if you take a closer look, you will find several California native forbs blooming and thriving in late summer and early fall. These species are amazing in their beauty and their ability to survive and even flower during the hottest, driest part of the year.

Several of these late season flowering plants are in the sunflower,



mint and buckwheat families and have adaptations that allow them to survive our hot dry summers such as extensive root systems that are able to use what

little moisture is available in the soil. These plants limit the amount of water lost through their leaves by having small leaves (tarweed and spikeweed) or leaves that are very waxy (gum plant) or hairy (vinegar weed and buckwheats). Many buckwheats also have leaves that are rolled in at the edges to limit water loss. Look for these hardy beauties at Site 300 and in our nearby hills.



1) Wright’s buckwheat (*Eriogonum wrightii*), BUCKWHEAT FAMILY; 2) angle-stemmed wild buckwheat (*Eriogonum angulosum*), BUCKWHEAT FAMILY; 3) vinegar weed (*Trichostema lanceolatum*), MINT FAMILY; 4) spikeweed (*Hemizonia pungens*), SUNFLOWER FAMILY; 5) California matchweed (*Gutierrezia californica*) SUNFLOWER FAMILY; 6) big tarplant (*Blepharizonia plumosa*), SUNFLOWER FAMILY; 7) gum plant (*Grindelia camporum*), SUNFLOWER FAMILY; 8) tar weed (*Holocarpha obconica*), SUNFLOWER FAMILY

Vintage sheen



ED MILLER

The Livermore Laboratory Employee Services Association (LLESA) held its annual Vintage Vehicle Show in the parking area near Bldg. 111 during the noon hour Wednesday, Sept. 14.



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